

# Inventions & Innovation Emerging Technology

## Process for Conserving Steam Quality in Deep Steam Injection Wells

High steam quality, required for successful heavy oil recovery, is difficult to achieve in deep wells from surface-generated steam because of excessive steam tubing heat loss. Three methods are available to reduce such a loss: insulated tubing, a gas-filled casing-tubing annulus, and a heat source in the annulus gas to prevent condensation of water vapor on the casing wall. All three methods have been combined in a new process, in which a heat source is provided by hot oil and water flowing from the reservoir to the surface in production tubing that is parallel to the steam tubing.



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